Course Outline

Course Code	RSM 358 H1 F
Course Name	Foundations of AI for Management
Term, Year	Fall, 2022
Course Schedule	L0101 Wed 3-5 / RT 142
Web page URL	https://q.utoronto.ca

Instructor Details

Name	Email	Phone	Office Hours	Office Link
Ryan Webb	ryan.webb@rotman.utoronto.ca	416-978-4418	F 2-4	Rotman 568

Course Scope, Mission and Learning Outcomes

Artificial intelligence — the application of machine-learning techniques to prediction problems historically performed by humans— is transforming business and society. This course provides a hands-on introduction to the wide variety of algorithms used in applications of machine-learning. The technical topics will include linear regression models, classification algorithms, and more recent machine-learning techniques rooted in neuroscience like reinforcement learning and deep learning. Application topics will include predicting consumer choices, MLB salaries, and Super Mario Bros. There will be an emphasis on conceptual understanding, so that students can interpret the results of these techniques to support effective decision-making. The course will be complemented by many hands-on exercises using the R programming language.

Course Prerequisites

ECO 220 or ECO 227 & CSC 108 or CSC 148 *(fas.calendar.utoronto.ca/section/Rotman-Commerce).*

Course Materials

Required Readings

Item	Title	Required	Instructions
Text	An Introduction to Statistical Learning (2nd Ed) By James, Witten, Hastie, Tibshirani	Yes	This will be the main text for the course. It is available in hardcopy or online here
Text	Reinforcement Learning By Sutton and Barto	No	Some material will be drawn from this textbook, but it is not mandatory reading
Reading	Prediction Machines By Agarwal, Gans, Goldfarb	No	Available online from UofT library here

Evaluation and Grades

Grades are a measure of the knowledge and skills developed by a student within individual courses. Each student will receive a grade on the basis of how well they have command of the course materials, skills and learning objectives of the course.

Work	Percentage of grade	Due Date
Class Participation/Attendance	10%	Ongoing
Assignments	30%	See Quercus
Mid-Term Test	20%	Oct 19
Final Term Test	40%	Date to be determined

Course Format and Expectations

Writing Assignments or Presentations

All assignment will be submitted via Quercus. Students are expected to compete the assignments individually and be familiar with the University of Toronto standards of Academic Integrity (see below).

Class Participation

Students are expected to prepare thoroughly and make every effort to attend every class. As class participation is a graded component of the course, students will be evaluated on the following:

- Thoughtful responses
- Understanding and analysis of topic
- Idea generation
- Promoting further discussion

Missed Tests and Assignments (including mid-term and final-term assessments)

Students who miss a test or assignment for reasons entirely beyond their control (e.g. illness) may request special consideration.

In such cases, students must:

1. Notify the instructor AND the Rotman Commerce Program Office **on the date** of the missed course deliverable, e.g. missed test, final assessments, assignment or class (in the case of participation marks).
2. Complete a [Request for Special Consideration Form](#) and submit it along with your Absence Declaration on [ACORN](#) (please read the instructions on how to use the Absence Declaration in ACORN) within **2 business days** of the originally scheduled course deliverable.

The mark for the final exam will be re-weighted to account for the missed test or assignment. Students who do not provide appropriate or sufficient supporting documentation will be given a grade of 0 (zero) for the missed course deliverable.

Late Assignments

All assignments are due on the date and at the time specified in Quercus. Late submissions will normally be penalized by 25% if the assignment is not received on the specified date, at the specified time. A further penalty of 25% will be applied to each subsequent day. Students who, for reasons beyond their control, are unable to submit an assignment by its deadline must

obtain approval from the instructor for an extension. Supporting documentation will be required as per the policy on missed tests and assignments.

Statement on Equity, Diversity and Inclusion

The University of Toronto is committed to equity, human rights and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere of mutual respect where all members of our community can express themselves, engage with each other, and respect one another's differences. U of T does not condone discrimination or harassment against any persons or communities.

Commitment to Accessibility

The University is committed to inclusivity and accessibility, and strives to provide support for, and facilitate the accommodation of, individuals with disabilities so that all may share the same level of access to opportunities and activities offered at the University.

If you require accommodations for a temporary or ongoing disability or health concern, or have any accessibility concerns about the course, the classroom or course materials, please email Accessibility Services or visit the Accessibility Services website for more information as soon as possible. Obtaining your accommodation letter may take up to several weeks, so get in touch with them as soon as possible. If you have general questions or concerns about the accessibility of this course, you are encouraged to reach out to your instructor, course coordinator, or Accessibility Services.

Academic Integrity

Academic Integrity is a fundamental value essential to the pursuit of learning and scholarship at the University of Toronto. Participating honestly, respectfully, responsibly, and fairly in this academic community ensures that the U of T degree that you earn will continue to be valued and respected as a true signifier of a student's individual work and academic achievement. As a result, the University treats cases of academic misconduct very seriously.

The University of Toronto's Code of Behaviour on Academic Matters outlines the behaviours that constitute academic misconduct, the process for addressing academic offences and the penalties that may be imposed. You are expected to be familiar with the contents of this document. Potential offences include, but are not limited to:

In papers and assignments

- Using someone else's ideas or words without appropriate acknowledgement.
- Submitting your own work in more than one course without the permission of the instructor.
- Making up sources or facts.
- Obtaining or providing unauthorized assistance on any assignment (this includes collaborating with others on assignments that are supposed to be completed individually).

On test and exams

- Using or possessing any unauthorized aid, including a cell phone.
- Looking at someone else's answers.
- Misrepresenting your identity.
- Submitting an altered test for re-grading.

Misrepresentation

- Falsifying institutional documents or grades.
- Falsifying or altering any documentation required by the University, including (but not limited to) medical notes.

All suspected cases of academic dishonesty will be investigated by the procedures outlined in the *Code of Behaviour on Academic Matters.* If you have any question about what is or is not permitted in the course, please do not hesitate to contact the course instructor. If you have any questions about appropriate research and citation methods, you are expected to seek out additional information from the instructor or other U of T or RC resources such as the RC Centre for Professional Skills, the College Writing Centres or the Academic Success Centre.

Email

At times, the course instructor may decide to communicate important course information by email. As such, all U of T students are required to have a valid UTmail+ email address. You are responsible for ensuring that your UTmail+ email address is set up and properly entered on ACORN. For more information visit the [Information Commons Help Desk](#).

Forwarding your utoronto.ca email to a Gmail or other type of email account is not advisable. In some cases, messages from utoronto.ca addresses sent to Gmail accounts are filtered as junk mail, which means that important messages from your course instructor may end up in your spam or junk mail folder.

Recording Lectures

Lectures and course materials prepared by the instructor are considered by the University to be an instructor's intellectual property covered by the Canadian Copyright Act. Students wishing to record a lecture or other course material in any way are required to ask the instructor's explicit permission, and may not do so unless permission is granted. Students who have been previously granted permission to record lectures as an accommodation for a disability are excepted. This includes tape recording, filming, photographing PowerPoint slides, Quercus materials, etc.

If permission for recording is granted by the instructor (or via Accessibility Services), it is intended for the individual student's own study purposes and does not include permission to "publish" them in any way. It is forbidden for a student to publish an instructor's notes to a website or sell them in any other form without formal permission.

Weekly Schedule *(EXAMPLE)*

Session	Date	Topic	Readings
1	Sep 14	**Course Overview and Introduction**	Prediction Machines, Ch 1-2 ISL: 2.1
2	Sep 21	**Assessing Model Accuracy**	ISL: 2.2
3	Sep 28	**Linear Regression Review**	ISL: 3.1-3.5
4	Oct 5	**Classification** – Logistic Regression	ISL: 4.1-4.3
5	Oct 12	**Resampling** – Cross-Validation and Bootstrapping	ISL: 5
6	Oct 19	**MIDTERM**	
7	Oct 26	**Model Selection** – Subset Methods	ISL: 6.1
8	Nov 2	**Model Selection** – Shrinkage Methods	ISL: 6.2
9	Nov 16	**Non-Linearities** – Polynomial Regression, Splines	ISL: 7.1 - 7.6
10	Nov 23	**Trees –** Pruning, Bagging, Random Forests, Boosting	ISL: 8
11	Nov 30	**Reinforcement Learning**	S&B: 2.1-2.5
12	Dec 7	**Deep Learning**	ISL: 10

Please note that the last day you can drop this course without academic penalty is November 16, 2022.

Other Useful Links

- [Become a volunteer note taker](#)
- [Accessibility Services Note Taking Support](#)
- [Credit / No-Credit in RSM courses](#)
- [Rotman Commerce Academic Support](#)

URL links for print

- Book an appointment with a writing or presentation coach: http://uoft.me/writingcentres
- Writing and Presentation Coaching academic support page: https://rotmancommerce.utoronto.ca/current-students/academic-support/writing-and-presentation-coaching/
- Centre for Professional Skills Teamwork Resources page: https://rotmancommerce.utoronto.ca/teamwork-resources
- Book an appointment with a Teamwork Mentor: http://uoft.me/writingcentres
- Request for Special Consideration Form: https://rotmancommerce.utoronto.ca/current-students/forms-requests-and-appeals/forms/
- ACORN: http://www.acorn.utoronto.ca/
- Email Accessibility Services: accessibility.services@utoronto.ca
- Accessibility Services website: http://studentlife.utoronto.ca/as
- University's Plagiarism Detection Tool FAQ: https://uoft.me/pdt-faq
- The University of Toronto's Code of Behaviour on Academic Matters: http://www.governingcouncil.utoronto.ca/policies/behaveac.htm
- Information Commons Help Desk: http://help.ic.utoronto.ca/category/3/utmail.html
- Become a volunteer note taker: https://studentlife.utoronto.ca/program/volunteer-note-taking/
- Accessibility Services Note Taking Support: https://studentlife.utoronto.ca/service/note-taking-support/
- Credit / No-Credit in RSM courses: https://rotmancommerce.utoronto.ca/current-students/degree-requirements/credit-no-credit-option/
- Rotman Commerce Academic Support: https://rotmancommerce.utoronto.ca/current-students/academic-support/